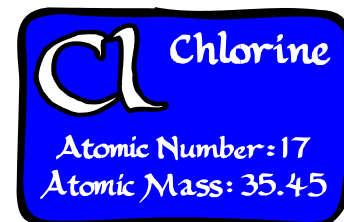


Spotlight On Safety

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USE OF CHLORINE DISINFECTANTS

Chlorine is a universal disinfectant active against all microorganisms including bacterial spores (commonly used in the form of bleach). Wear safety goggles, rubber gloves, aprons, or other protective clothing when handling undiluted solutions.



Use in the Lab

- The Center for Disease Control (CDC) recommends 1:100 dilution of household bleach to 1:10 dilution of bleach, depending on the amount of organic material present, to inactivate Human Immunodeficiency Virus (HIV)
- Strength of chlorine used for disinfection must be clearly indicated in the Biological Agent Use Authorization or training documentation (standard operating procedures)

Stability of Chlorine Solutions

- Solution must have the following characteristics for maximum stability: low chlorine concentration, absence or low content of catalysts, high alkalinity, low temperature, absence of organic materials, and shielded from UV light by storage in dark containers
- Will gradually lose strength - fresh solutions must be prepared frequently and replaced after 24 hours

Factors Affecting Chlorine Biocidal Activity

- Chlorine is more effective at a lower pH
- An increase in temperature produces an increase in bactericidal activity
- A fourfold increase of chlorine concentration will result in a 50% reduction in killing time, and a twofold increase in a 30% reduction
- Organic material will consume available chlorine (if organic material contains proteins, reaction with chlorine will form chloramines that will have some antibacterial activity)
- Footbaths are frequently contaminated with organic material and may require more frequent changing than the 24 hrs
- Hardness of water does not have a slowing effect on antibacterial sodium hypochlorite
- Addition of ammonia and nitrogen (amino) compounds slows bactericidal action

Other Available Chlorine Compounds

- Liquid chlorine, chlorine dioxide, inorganic chloramines, organic chloramines, and halazone

Characteristics & Hazards

- Concentration rapidly decreases when combined with protein, is inactivated to some extent by natural non-protein material/ plastics and is incompatible with cationic detergents
- Corrosive to metals (must not be used on metal parts of centrifuges and other machines that are subject to stress when in use)
- Do not autoclave solutions or materials treated with them, as the residual chlorine can vaporize resulting in an inhalation hazard
- Do not use with ammonia, acetylene, butadiene, butane, methane, propane (or other) petroleum gases, hydrogen, sodium carbide, benzene, finely divided metals, or turpentine
- May cause irritation to eyes, skin, and lungs

For more information, visit www.ehs.ucr.edu or call 951-827-5528.